

*Exceptional precipitation for one hour and less—Continued.*

Station and state.	Amount.	Time.	Date.
	<i>Inches.</i>	<i>h. m.</i>	
Missoula, Mont.....	1.84	0 30	13, 1875
Thibodeaux, La.....	1.74	0 30	17, 1894
Batesville, Miss.....	1.72	0 30	24, 1892
Brooksville, Fla.....	1.59	0 30	17, 1889
Orlando, Fla.....	1.57	0 30	21, 1893
Newton, Iowa.....	1.56	0 30	3, 1894
Parkersburg, W. Va.....	1.55	0 30	26, 1891
Carrington, N. Dak.....	1.50	0 30	14, 1892
Canton, Pa.....	1.50	0 30	27, 1892
Larabee, Iowa.....	1.24	0 21	19, 1892
Jacksonville, Fla.....	1.81	0 21	26, 1875
Charlotte, N. C.....	2.08	0 34	30, 1889
Sedan, Kans.....	1.86	0 35	18, 1894
North Lewisburg, Ohio.....	1.60	0 39	27, 1879
Palestine, Tex.....	1.96	0 39	3, 1883
East Peoria, Ill.....	2.65	0 40	13, 1893
Belton, Tex.....	2.59	0 40	14, 1891
Oxanna, Ala.....	2.00	0 40	25, 1892
Uniontown, Pa.....	1.37	0 40	4, 1892
La Crosse, Wis.....	1.37	0 40	21, 1884
Wytheville, Va.....	2.70	0 44	25, 1875
Dodge City, Kans.....	3.24	0 45	19, 1888
Amana, Iowa.....	2.17	0 45	19, 1878
Charleston, S. C.....	2.61	0 50	7, 1893
Wellsboro, Pa.....	2.60	0 50	4, 1892
Cumberland, Md.....	4.64	1 00	19, 1882
Des Moines, Iowa.....	3.00	1 00	24, 1879
Merritts Island, Fla.....	3.00	1 00	23, 1889
Spooner, Wis.....	3.00	1 00	23, 1894

## HAIL.

The following are the dates on which hail fell in the respective States:

Alabama, 17. Arkansas, 20, 26. Colorado, 1 to 9, 14, 15, 16, 20, 21, 22, 24, 25, 27. Connecticut, 4, 12, 13, 15, 30. Delaware, 24. District of Columbia, 13. Florida, 3, 4, 29. Georgia, 29. Idaho, 3, 9, 10, 18, 19, 22. Illinois, 3, 6, 15, 17, 20 to 26, 30. Indiana, 12, 15, 16, 17, 20, 21, 26, 28. Iowa, 9,

15, 16, 20, 22, 23, 25, 26, 27, 30. Kansas, 3, 7 to 10, 15, 18 to 21, 23 to 29. Kentucky, 13, 14, 16, 17, 18, 26. Louisiana, 22, 25. Maine, 11, 17. Maryland, 5, 12, 24, 30. Massachusetts, 1, 2, 4, 7, 11, 17, 23, 30. Michigan, 12, 13, 14, 17, 22, 24, 28, 29. Minnesota, 20, 22, 23, 24, 26 to 29. Mississippi, 4, 9, 14, 16. Missouri, 4, 9, 10, 14, 15, 18, 21, 24, 25, 26, 28, 30. Montana, 1, 3 to 7, 10, 17 to 20, 25, 26.

Nebraska, 8, 9, 14, 16, 18, 20, 23, 25, 27, 29, 30. Nevada, 5, 6, 10, 11, 15. New Hampshire, 1, 7, 18, 19, 23, 30. New Jersey, 4, 13, 16, 19, 30. New Mexico, 1, 2, 4 to 7, 10, 11, 12, 15, 16. New York, 1, 3, 4, 5, 7, 12, 16, 17, 18, 24. North Carolina, 6, 13, 21, 28, 29, 30. North Dakota, 13, 19, 20, 21, 26. Ohio, 4, 12, 13, 16, 18, 21, 23 to 26, 28, 29, 30. Oregon, 2, 3, 9, 10, 14. Pennsylvania, 3, 4, 12, 16, 17, 18, 22, 23. South Carolina, 13, 25, 29, 30. South Dakota, 11, 12, 13, 19, 21, 22, 23, 25 to 28. Tennessee, 5, 12, 15, 16, 29. Texas, 1, 11, 16, 17, 19, 22. Utah, 5 to 8, 13, 20, 23, 26. Vermont, 7, 16, 17. Virginia, 6, 27. Washington, 2, 3, 9, 11, 18. West Virginia, 17, 20, 21, 22, 30. Wisconsin, 9, 15, 21, 22, 23, 25, 27, 28. Wyoming, 14, 15, 19.

*Monthly snowfall and amounts on ground on the 15th and at close of month.*

State and station.	Total.	15th.	30th.	State and station.	Total.	15th.	30th.
<i>Colorado.</i>				<i>Nevada—Cont'd.</i>			
Breckenridge.....	<i>Inches.</i>	<i>Ins.</i>	<i>Ins.</i>	McGill.....	<i>Inches.</i>	<i>Ins.</i>	<i>Ins.</i>
Climax.....	0.5	0.0	0.0	Stofel.....	1.5	0.0	0.0
Coma (near).....	13.1	0.0	0.0	Winnemucca.....	3.0	0.0	0.0
Stamford.....	0.2	0.0	0.0	<i>Oregon.</i>			
Steamboat Springs.....	T.	0.0	0.0	Happy Valley.....	0.2	0.0	0.0
Sunnyside.....	1.0	0.0	0.0	Joseph.....	2.5	0.0	0.0
Pikes Peak.....	2.1	0.0	0.0	<i>Utah.</i>			
<i>Idaho.</i>				Castle Gate.....	0.5	0.0	0.0
Lake.....	4.8	24.0	13.0	Logan.....	T.	0.0	0.0
<i>Nevada.</i>				Randolph.....	T.	0.0	0.0
Bellefonte.....	8.0	0.0	0.0	Scofield.....	8.5	0.0	0.0
Candelaria.....	T.	0.0	0.0	Silver Lake.....	12.0	0.0	0.0
Carson City.....	0.3	0.0	0.0	Singletree.....	T.	0.0	0.0
Ely.....	0.2	0.0	0.0				

## WIND.

## PREVAILING WINDS.

The prevailing winds for June, 1894, viz, those that were recorded most frequently at Weather Bureau stations, are shown in Tables I and VIII; they are not given on Chart II, as has hitherto been the custom, but the resultant winds are published instead.

## RESULTANT WINDS.

The resultant winds for the current month, as deduced from the hourly records by self-registers at about 67 regular Weather Bureau stations, are given in Table VIII. Other resultants, deduced from the personal observations made at 8 a. m. and 8 p. m., are given in Table IX. These latter resultants are also shown graphically on Chart II, in connection with the isobars based on the same system of simultaneous observation; the small figure attached to each arrow shows the number of hours that this resultant prevailed, on the assumption that each of the morning and evening observations represents one hour's duration of a wind of average velocity; these figures (or the ratio between them and the total number of observations in this month) indicate the extent to which winds from different directions counterbalance each other. The original north, south, east, and west components are given in detail in Table IX.

During June the resultant movement was generally from the southwest in New England and the middle Atlantic States, Ohio Valley and Tennessee, the upper and lower Lake regions, upper Mississippi Valley, and the northern Rocky Mountain slope. The resultant was from the southeast in Florida, the western Gulf States, North Dakota, and the Missouri Valley. The strongest resultants were: Savannah,

Amarillo, Corpus Christi, Galveston, Dodge City, and Oklahoma, southeast; Walla Walla, San Francisco, and Block Island, southwest; Fresno, northwest.

## HIGH WINDS.

Wind velocities of 50 miles, or more, per hour were reported at regular stations of the Weather Bureau as follows (maximum velocities are averages for 5 minutes; extreme velocities are gusts of shorter duration):

Stations.	Date.	Velocity.	Direction.	Stations.	Date.	Velocity.	Direction.
		<i>Miles.</i>				<i>Miles.</i>	
Amarillo, Tex.....	16	60	w.	Pikes Peak, Colo.....	11	84	sw.
Canby, Fort Wash.....	8	68	se.	Do.....	20	90	w.
Chicago, Ill.....	26	50	sw.	Portland, Oreg.....	2	53	s.
Huron, S. Dak.....	9	60	s.	Tatoosh Island, Wash..	2	54	s.
Do.....	19	69	se.	Do.....	9	56	sw.
Do.....	27	52	nw.	Winnemucca, Nev.....	3	56	s.
Little Rock, Ark.....	20	50	ne.				

## LOCAL STORMS.

Destructive or severe local storms were reported as follows:  
**2d.**—Thunder, hail, and wind storms, in Oregon and Washington. A man and horse were killed by lightning at Troutdale, Oreg.

**3d.**—Windstorms at Kent, Tex., and Grangeville, Idaho.

**4th.**—Thunderstorm at New London, Conn. Severe local storm at Callaway, Nebr., about 7.30 p. m.; two clouds, one moving from the northwest and the other from the northeast, met about  $\frac{1}{2}$  mile from the town, after which the clouds had

a whirling motion and the course of the storm was south. Windstorms at Cozad, Lexington, and Superior, Nebr.

**5th.**—Windstorm at Kipp, Mont. Hailstorm at Gallinas Spring, N. Mex.

**6th.**—Hail and thunder storm at Sante Fe, N. Mex.; began at 11.48 p. m., 6th, and continued until early morning, 7th.

**7th.**—Colorado Springs, Colo., rain and thunder storm in the afternoon.

**8th.**—A hailstorm at Lexington, Nebr.

**9th.**—A thunder and hail storm, with a funnel-shaped cloud, at Floydada, Tex. Thunderstorms in Kansas and Missouri. At Kansas City, Mo., a child killed by lightning. Takoma, Wash., windstorm; several persons injured.

**10th.**—Wakefield, Kans., stock killed by lightning.

**11th.**—Thunderstorms at Portland, Me., and Nantucket, Mass.

**12th.**—Greenfield Hill, Conn., hailstorm. Dunmore, Pa., a man and stock were killed and 2 persons injured by lightning. Baltimore, Md., thunderstorm with heavy rain in the afternoon; the temperature fell from 89° to 63° in about 10 minutes, and 0.30 inch of rain fell in 5 minutes. On Lake Huron, 5 miles out from Oscoda, Mich., man injured by lightning.

**13th.**—Southport and Wilmington, N. C., thunderstorms.

**14th.**—Glasgow, Mo., man killed by lightning.

**15th.**—Memphis and Nashville, Tenn., thunderstorms. Chicago, Ill., man killed by lightning. Ashboro, Ind., hailstorm. Granite Falls, Minn., horse killed by lightning. Des Moines, Iowa, and Concordia, Kans., thunderstorms. Gorin, Mo., hailstorm. Menominee, Mich., 3 men killed by lightning.

**16th.**—Albany, N. Y., and Harrisburg, Pa., thunderstorms. Conway, Ark., windstorm. Amarillo, Tex., thunder, wind, and hail storm. Springfield, Ill., thunderstorm. Near Athens, Ill., boy killed by lightning. Thornton, Mich., 4 persons injured by lightning.

**17th.**—Cornwall, Vt., North Hammond, N. Y., and Newbern, Ala., thunderstorms. Mason, Tenn., man killed by lightning. Louisville, Ky., windstorm. Harrison, Nebr., thunderstorm.

**18th.**—Lancaster, N. H., 2 persons injured by lightning. Malone, N. Y., 3 horses killed by lightning. Blacksburg, S. C., thunderstorm. Ellsworth, Kans., windstorm. Topeka, Kans., thunderstorm. Hutchinson, Kans., horse killed by lightning. Osage, Kans., man killed by lightning. Omaha, Nebr., thunderstorm.

**19th.**—Hartland, Vt., and Honeymead Brook, N. Y., thunderstorm. Paterson, N. J., wind and rain storm. Sioux City, Iowa, thunderstorm. Tornado passed about 12 miles northeast of Bowdle, S. Dak.; funnel-shaped cloud observed; 3 persons killed and 8 injured.

**20th.**—Portsmouth, Va., man killed by lightning. Conway, Ark., windstorm. Tuscola, Ill., boy killed by lightning. Brookville, Ind., windstorm. Worthington, Ind., and Clarion, Iowa, thunderstorms. Eagle Grove, Mason City, and Sioux City, Iowa, windstorms. Faribault, Minn., thunder and rain storm; one man killed. Narka, Kans., thunderstorm. Dorchester, Syracuse, and Lincoln, Nebr., windstorms. Omaha, Nebr., thunderstorm; one person drowned by the capsizing of a boat and a boy fatally injured by flying debris.

**21st.**—Parkersburg, W. Va., most severe thunder and rain storm on record; began 11.32 p. m., ended 12.15 a. m., 22d. Boonville, Mo., and Dodge City, Kans., thunderstorms. Hutchinson, Kans., boy killed by lightning.

**22d.**—Parkersburg, W. Va., thunderstorm. Charleston, W. Va., one person and a horse killed by lightning. Oxford, La., windstorm. Twelve miles northeast of Bayport, Mich., man killed by lightning. Port Huron, Mich., thunderstorm. Le Claire and Princeton, Iowa, hailstorms. Pine River, Minn., thunder and wind storm.

**23d.**—Antrim, N. H., and Fitchburg, Mass., thunderstorms. Near Friendship, N. Y., stock killed by lightning. Egypt, Miss., windstorm. About 1½ miles east of Tiffin, Ohio, wind and rain storm moved north; one person killed. Stevens Point, Wis., thunderstorm. Hays City, Kans., and 10 miles south of Huron, S. Dak., hailstorms. Irvington, Nebr., windstorm.

**24th.**—Squalls and rough sea in New York Harbor. North Hammond, N. Y., and Erie, Pa., thunderstorms. Phoenixville, Pa., wind and rain storm. Ashtabula, Ohio, rain and hail storm. Madison, Ind., windstorm. Detroit, Mich., rain and wind storm. Point Edward, Mich., man injured by lightning. Near Chillicothe, Mo., horses killed by lightning.

**25th.**—Charlotte, N. C., man killed by lightning. Tampa, Fla., Pekin, Ill., and Detroit, Mich., thunderstorms. Two miles east of Reedsburg, Wis., stock killed by lightning. East Lynne, Hardin, and Mexico, Mo., thunderstorms. Cedar Point, Kans., thunderstorm; funnel-shaped cloud observed. Concordia and Girard, Kans., rainstorms. Montgomery County, Kans., hailstorm. Keighley and Oswego, Kans., thunderstorms.

**26th.**—Erie, Pa., thunderstorm; 3 persons stunned by lightning. Four miles east of Erie man killed and 2 persons stunned by lightning. Parkersburg, W. Va., Louisville, Ky., and in Ohio, thunderstorms. Madison and Worthington, Ind., windstorms. Yates Center, Kans., thunderstorm. Toronto, Kans., windstorm. Northwestern part of Wyoming, man killed by lightning.

**27th.**—Bethlehem, N. H., and Watertown, N. Y., thunderstorms. Violent local storms, with characteristics of tornadoes, occurred at the following places in Minnesota and South Dakota: Cedar Mills, Cold Springs, Willmar, Collegeville, Echo, Sleepy Eye, Fergus Falls, Forest City, Holland, Litchfield, Minneapolis, Montrose, Raymond, St. Paul, Selma, and Pipe Stone, Minn.; Aberdeen, Alpena, Bath, Bonilla, Huron, Hitchcock, St. Lawrence, and Sisseton Agency, S. Dak. Ten persons were killed in Minnesota and 6 in South Dakota. Pittsburg, Kans., windstorm; funnel-shaped cloud observed.

**28th.**—Falkland, N. C., rainstorm. Augusta, Ga., thunderstorm. Springdale, Tenn., rainstorm. Logan, Ohio, windstorm. Montpelier and Toledo, Ohio, thunderstorms. New Holland, Ohio, rainstorm. Chillicothe, Mo., thunderstorm.

**29th.**—Bailey, N. C., Moseley Hall and Tampa, Fla., thunderstorms.

**30th.**—New Hartford, Conn., cattle killed by lightning. Dyberry, Pa., thunderstorm. Salisbury, N. C., and Blacksburg, S. C., windstorms. Lake City, Fla., thunderstorm. Ovid, Iowa, 6 miles from St. Charles, Mo., 2 horses killed by lightning.

## ATMOSPHERIC ELECTRICITY.

### GENERAL STATISTICS.

The table on page 251 shows in detail for June, 1894, the number of stations from which meteorological reports were received, and the number of such stations reporting thunderstorms (T) and auroras (A) in each State and on each day of the month.

### THUNDERSTORMS.

A mention of the more severe thunderstorms reported during the month is given under "Local storms." The dates on which reports of thunderstorms were most numerous were the 16th, 294; 17th, 257; 18th, 268; 21st, 227; 23d, 277; 24th, 295; 25th, 254; 26th, 289.